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2012-59111
CoE 197S 2s2021 ME8 Activity 03: BUILDING IMAGES

I. GETTING SETUP

1. Pull ubuntu:16.04 and remove other images and containers:

```
C:\Users\Richard Mendoza>docker images
REPOSITORY        TAG        IMAGE ID        CREATED          SIZE
rmendoza24/ping   latest     d80ab5747ef3    45 minutes ago   170MB
ubuntu            16.04      b6f507652425    9 months ago     135MB

C:\Users\Richard Mendoza>docker rmi d80
Untagged: rmendoza24/ping:latest
Deleted: sha256:d80ab5747ef36cd1be1baeea9fb3aeeb9eacb4a02d57dfbc810b4cc23edc6064
Deleted: sha256:26ebb906a63f7ce00b25b5ea3fca690d5f22702439f2b9fe6198ef1109db2e71

C:\Users\Richard Mendoza>docker images
REPOSITORY     TAG       IMAGE ID        CREATED          SIZE
ubuntu         16.04     b6f507652425    9 months ago     135MB
```
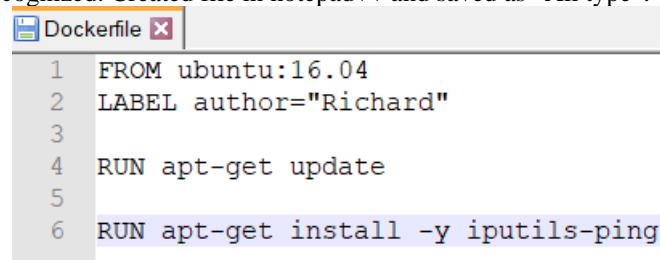
II. CREATING A DOCKERFILE

1. Create new file "Dockerfile"
//touch command not recognized. Created file in notepad++ and saved as "All type".

```
Dockerfile
1  FROM ubuntu:16.04
2  LABEL author="Richard"
3
4  RUN apt-get update
5
6  RUN apt-get install -y iputils-ping
```

III. BUILDING THE DOCKERFILE

1. Build image.
//First run took 147s.

```
C:\Users\Richard Mendoza>docker build -t rmendoza24/ping .
[+] Building 0.2s (7/7) FINISHED
 => [internal] load build definition from Dockerfile                                  0.0s
 => => transferring dockerfile: 31B                                                   0.0s
 => [internal] load .dockerignore                                                     0.0s
 => => transferring context: 2B                                                       0.0s
 => [internal] load metadata for docker.io/library/ubuntu:16.04                       0.0s
 => [1/3] FROM docker.io/library/ubuntu:16.04                                         0.0s
 => CACHED [2/3] RUN apt-get update                                                   0.0s
 => CACHED [3/3] RUN apt-get install -y iputils-ping                                  0.0s
 => exporting to image                                                                0.0s
 => => exporting layers                                                               0.0s
 => => writing image sha256:946655dbdc103b652b229d6f4728050ae95e5644f39ec95771fa49252ba3574c   0.0s
 => => naming to docker.io/rmendoza24/ping                                            0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

C:\Users\Richard Mendoza>docker images
REPOSITORY        TAG        IMAGE ID        CREATED             SIZE
rmendoza24/ping   latest     946655dbdc10    About a minute ago  170MB
ubuntu            16.04      b6f507652425    9 months ago        135MB

C:\Users\Richard Mendoza>
```

III. OPTIMIZING THE DOCKERFILE

1. adding RUN apt-get clean to Dockerfile:

```
Dockerfile
1   FROM ubuntu:16.04
2   LABEL author="Richard"
3
4   RUN apt-get update
5
6   RUN apt-get install -y iputils-ping
7
8   RUN apt-get clean \
9       && cd /var/lib/apt/lists && rm -fr *Release* *Sources* *Packages* \
10      && truncate -s 0 /var/log/*log
```

```
C:\Users\Richard Mendoza>docker images
REPOSITORY          TAG       IMAGE ID       CREATED          SIZE
rmendoza24/ping     latest    f8dd0c6c02ac   7 seconds ago    170MB
<none>              <none>    946655dbdc10   11 minutes ago   170MB
ubuntu              16.04     b6f507652425   9 months ago     135MB

C:\Users\Richard Mendoza>
```

2. Rewritten Dockerfile:

```
Dockerfile
1   FROM ubuntu:16.04
2   LABEL author="Richard"
3
4   RUN apt-get update \
5       && apt-get install -y iputils-ping \
6       && apt-get clean \
7       && cd /var/lib/apt/lists && rm -fr *Release* *Sources* *Packages* \
8       && truncate -s 0 /var/log/*log
```

```
C:\Users\Richard Mendoza>docker build -t rmendoza24/ping .
[+] Building 204.6s (6/6) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 279B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/ubuntu:16.04
 => CACHED [1/2] FROM docker.io/library/ubuntu:16.04
 => [2/2] RUN apt-get update    && apt-get install -y iputils-ping    && apt-get clean    && cd /va
 => exporting to image
 => => exporting layers
 => => writing image sha256:e86aea8ea7bacae1cc46cc7bf4bcc28dbfcb364b8dc27e08f7d329832d72a5a8
 => => naming to docker.io/rmendoza24/ping

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

C:\Users\Richard Mendoza>docker images
REPOSITORY          TAG       IMAGE ID       CREATED          SIZE
rmendoza24/ping     latest    e86aea8ea7ba   10 seconds ago   139MB
<none>              <none>    f8dd0c6c02ac   5 minutes ago    170MB
<none>              <none>    946655dbdc10   16 minutes ago   170MB
ubuntu              16.04     b6f507652425   9 months ago     135MB

C:\Users\Richard Mendoza>
```

IV. OTHER DOCKERFILE DIRECTIVES

1. Add ENV and CMD directives to Dockerfile:

```
 1    FROM ubuntu:16.04
 2    LABEL author="Richard"
 3
 4    ENV PING_TARGET "google.com"
 5
 6    RUN apt-get update \
 7        && apt-get install -y iputils-ping \
 8        && apt-get clean \
 9        && cd /var/lib/apt/lists && rm -fr *Release* *Sources* *Packages* \
10        && truncate -s 0 /var/log/*log
11
12    CMD ["sh", "-c", "ping $PING_TARGET"]
```

```
C:\Users\Richard Mendoza>docker images
REPOSITORY          TAG         IMAGE ID        CREATED             SIZE
rmendoza24/ping     latest      5904d10d41e6    About a minute ago  139MB
<none>              <none>      e86aea8ea7ba    7 minutes ago       139MB
<none>              <none>      f8dd0c6c02ac    13 minutes ago      170MB
<none>              <none>      946655dbdc10    24 minutes ago      170MB
ubuntu              16.04       b6f507652425    9 months ago        135MB

C:\Users\Richard Mendoza>docker run -it rmendoza24/ping
PING google.com (172.217.31.14) 56(84) bytes of data.
64 bytes from 172.217.31.14: icmp_seq=1 ttl=37 time=57.2 ms
64 bytes from 172.217.31.14: icmp_seq=2 ttl=37 time=84.0 ms
64 bytes from 172.217.31.14: icmp_seq=3 ttl=37 time=108 ms
^C
--- google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 57.246/83.335/108.731/21.025 ms

C:\Users\Richard Mendoza>
```